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From: Dr. William K. Krebs, Aviation Maintenance Human Factors Program Manager
To: Airworthiness TCRG

Subj: AVIATION MAINTENANCE HUMAN FACTORS THIRD QUARTER '02 REPORT

Ref: (a) ATA Maintenance Human Factors Subcommittee meeting, Seattle WA, July 17th, 2002
(b) Aviation maintenance human factors execution plans

1) Per reference (a), the Aviation Maintenance Human Factors Program Manager presented the research program to the ATA group. To view the presentation, please point to http://www.hf.faa.gov/docs/ATAMaint071702.ppt

2) Per reference (b), as stated in each execution plan, the third quarter report for each aviation maintenance human factors project is listed below.

   a) An Evaluation of Broadband Applications to Aircraft Maintenance Safety. The researcher submitted an acceptable proposal to AAR-100. The aviation maintenance human factors program manager has requested funds to be transferred to the institution. In the meantime, the researcher has begun the project to meet the first year milestones.
      i. Comprehensive literature bibliography
      ii. Identify maintenance and third party repair facilities located across the country to be used in the data collection
      iii. Develop and administer survey on how maintenance personnel use maintenance data, i.e. how much and which types of information are electronic?
      iv. Create a matrix that identifies the types of broadband technologies used by maintenance and third party repair facilities

      All indications indicate that this project is on track to complete year 1 milestones as planned.

   b) Vision Testing Requirements for Certain Persons Maintaining and Inspecting Aircraft and Aircraft Components. Representatives from Civil Aeromedical

Institute (AAM-600) and (AAM-500), NASA Ames Research Center, SUNY Buffalo, Ohio State University, and AAR-100 met on June 12th at the Civil Aeromedical Institute to review the project. The kick-off meeting reviewed NASA Ames Research Center and Civil Aeromedical Institute's progress in determining what are the acceptable vision standards and procedures for personnel involved in nondestructive inspection and testing (NDI/NDT) and visual inspection of aircraft and aircraft components. Dr. Beard, NASA Ames Research Center, conducted an exhaustive literature review, in both controlled laboratory settings and in other occupational settings, to determine whether information already exists that may be used to develop vision requirements for aircraft maintenance inspection workers. In addition, Dr. Beard's research team interviewed NDI/NDT and visual inspection personnel at several different aviation maintenance facilities to further understand the multitude of maintenance tasks performed on aircraft.

On October 15th, NASA Ames Research Center and Civil Aeromedical Institute will submit an interim report to AAR-100. This report will recommend whether there is sufficient information from previous vision research and aviation maintenance studies that can be used to write a medial standard for Flight Standards (AFS-300). If there is not sufficient information, then the AAR-100 aviation maintenance human factors program manager will proceed with Phase II of the project. Phase II will conduct a field experiment to determine the minimum acceptable visual processes required to conduct a particular NDI/NDT and visual inspection procedure. From these results, an assessment will be made to determine the impact of these newly developed recommended vision standards may have on the current NDI/NDT and visual inspection employee population.

All indications indicate that this project is on track to complete Phase I milestones as planned.

c) Language Barriers Result in Maintenance Deficiencies. The researcher's grant proposal was funded in Quarter three 2002. The researcher has made excellent progress in addressing year one's first two milestones.
   i. Comprehensive literature bibliography
   ii. Determine frequency and types of errors attributable to language for maintenance and inspection personnel who work in maintenance facilities and third party repair stations.

All indications indicate that this project is on track to complete year 1 milestones as planned.

d) Using Technology to Support Inspector Training. The researcher's grant proposal was funded in Quarter three 2002. The researcher has made excellent progress in addressing year one's first three milestones.
   i. Comprehensive literature bibliography
   ii. Develop data collection instruments

iii. Identify general aviation, regional, and corporate maintenance facilities located across the country to be used in the data collection

All indications indicate that this project is on track to complete year 1 milestones as planned.

e) Review Amateur-Built Aircraft Accident/Incidents. On April 26th, AAM-500 representatives and the Aviation Maintenance Human Factors Program Manager met with Mr. Bill O'Brien (AFS-300) to review the execution plan and to further define AFS-300's requirements. The following third quarter objectives were met:

i. At the request of Mr. O'Brien submitted analysis summary by May 28th, 2002,
ii. Expand A-B database thru 99 data & convert to SPSS by June 30th, 2002

The researchers are progressing well and intend to meet the following September milestones:

i. Taxonomy of M-R causes* and frequency of causes
ii. Causes by fatalities and injuries
iii. Airframe time*** by fatalities and Injuries
iv. Time since last inspection by fatalities and injuries
v. Phase of operation by fatalities and injuries

All indications indicate that this project is on track to complete year 1 milestones as planned.